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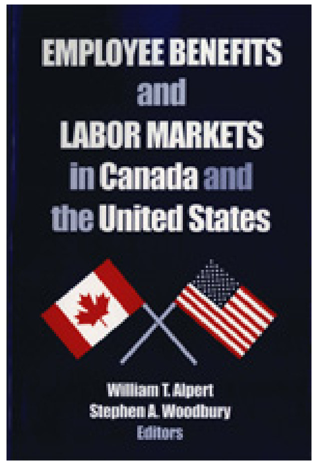

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7 Part-Time Work, Health Insurance Coverage, and the Wages of Married Women

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One of the most significant and persistent differences between the behavior of men and women in the U.S. labor market is the greater variability in hours worked per week by women. In 1991, the median number of weekly hours worked by women in the labor force who were 18–60 years old was 40 hours, with substantial variation around this median. The first decile of the hours distribution for working women was 20 hours per week and the first quartile was 32 hours. This distribution has remained basically unchanged since at least 1979.[1]

The dominant factor thought to account for the greater variability in hours worked among women is gender specialization in household production activities, with women choosing to adjust the intensity of their labor-market activities in response to the demands placed on their time by other household members. In a simple labor-supply model, womens' wages are taken as exogenous to their labor-supply decisions, and women select hours of work based on other household income and the relative value of their market and household time. Thus, as the value of household time changes relative to market activity, the simple theory predicts that adjustments will be made in hours worked. However, research in recent years suggests that adjusting hours worked in response to changing labor-supply preferences is costly for women because of employer constraints on hours worked and incomplete information about the wage-hour combinations available in the market (e.g., Blank 1988; Altonji and Paxson 1988, 1991; Dickens and Lundberg 1993). These constraints call into question the assumption that the wage rate is exogenous to the labor-supply decision.

This chapter investigates a different demand-side constraint that may influence the labor-supply decisions of married women and that has not been previously investigated. I investigate how the correlation between hours worked per week and the structure of the compensation package offered by employers alters the labor-supply decisions of married women in the United States. This study focuses on employer-provided health insurance and investigates how the demand for health insurance by married women alters their labor-supply decisions.[2] I hypothesize the demand by a married woman for a job with health benefits is greater among those wives whose husbands do not have employer-provided health insurance as compared with households where husbands have jobs that provide health benefits. Because health insurance is typically not available to employees working less than 35 hours per week, married women without spousal health insurance coverage adjust their labor-supply decisions to obtain health benefits. To test this prediction, I use data on weekly hours worked and employer-provided health insurance (EPHI) for 1982 and 1992 as reported in the 1983 and 1993 March Current Population Survey (CPS).

The results in this paper show that in 1992, married women whose husbands lacked employer-provided health benefits worked more hours per week than wives in households where their spouses had health insurance. In contrast, the 1982 estimates show no effect of husbands health insurance coverage on the labor supply decisions of wives. The differing results for the two time periods is explained by the decline in employer provided health insurance among married males between 1982 and 1992. In 1982 some wives seeking a job with employer provided health insurance because their husbands lacked these benefits would have worked full time even if their husband had a job with EPHI. However, the decline in EPHI coverage among married males over the 1982–1992 time period from 0.67 to 0.62 caused working wives in some households in 1992 to seek full-time jobs with health benefits. By 1992 this included some households where the wife would have preferred to work part time if her husband had a job that provided health benefits. Thus, the employer constraint that full-time work is required to obtain health benefits was not binding on married women in 1982 but became binding by 1992 because of the decline in married male health insurance coverage.

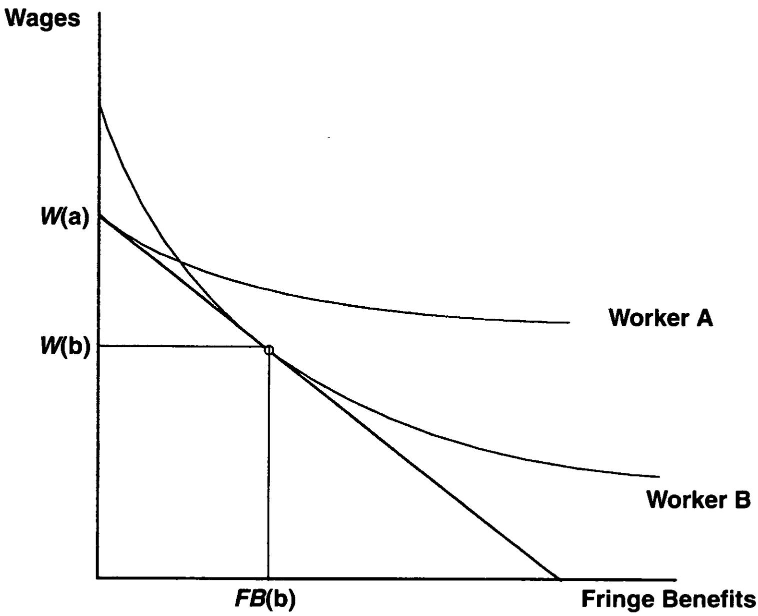
Compensating wage theory predicts that women choosing to work full time to obtain health insurance receive a lower wage compared to what they could earn if they accepted a full-time job without health insurance. Using the husband's health insurance coverage as an instrument that is correlated with his wife's health insurance coverage but assumed to be uncorrelated with his wife's wage. I find the predicted negative relationship between the hourly wage of wives working full time and their estimate suggests that married women working full time accept about a 10 percent wage reduction in exchange for employer-provided health benefits.

EMPLOYER-PROVIDED HEALTH INSURANCE: THEORY AND EVIDENCE

The application of standard compensating wage theory to fringe benefits predicts that workers differ in their demand for employer-provided benefits and sort themselves across firms so the mix between wages and fringe benefits matches their preferences. Holding human capital and other variables influencing wages constant, workers that receive more generous fringe benefits receive a lower wage than comparable workers that prefer fewer fringe benefits (Rosen 1986). The standard figure illustrating this prediction is shown in Figure 1, where workers maximize their utility subject to a budget constraint that is defined by the human capital and ability levels. Worker A prefers a compensation package without any fringe benefits and Worker B accepts a job that provides both wages (W_B) and fringe benefits (FB_B).

This standard story of the relationship between wages and fringe benefits is complicated in the case of employer-provided health benefits because of the private information employees and potential employees have about their demand for health care. Private information held by individuals about their demand for health care creates an adverse selection problem for the firm if all employees are charged the same price for health insurance through an identical wage adjustment. There are several ways firms may respond to this adverse selection. Firms could individually adjust worker wages *ex post* based on the pattern of health expenditure claims observed as worker tenure increases.[3]

Figure 1 Wage–Fringe Benefit Trade-off



Firms could also create rate classes based on expected health care costs (e.g., younger versus older workers) and adjust wages differently for workers in the different rate classes.[4] Although it is unclear which alternative firms will select, I hypothesize that most firms simply charge all employees the same price for health benefits in the form of lower wages and, like an insurance company, screen out less healthy workers and try to create a workforce with homogenous health demands that minimizes the subsidies from healthy to less healthy workers. This approach, of course, provides less healthy workers with a strong incentive to seek employment in firms that offer health insurance so they can receive health benefits at a price that is less than their expected health care expenditures.

One strategy firms follow to screen out workers with high demand for health care is to limit health insurance coverage to full-time workers. Such a policy reduces adverse selection in two ways. First, the ability to work full time may screen out workers with costly health care problems because these same health problems may preclude full-time employment. Second, limiting health insurance to only full-time workers ensures health care benefits are a small share of total compensation. Health benefits are a relatively larger share of total compensation when they are provided to part-time workers, and this may cause some workers with very high demands for health insurance to work part time just for the health benefits.

Table 1 reports data from the health insurance questions in the 1983 and 1993 March CPSs; the data show a strong positive relationship between hours worked per week and health insurance coverage. The probability of having a job that provided health insurance increases modestly with hours worked up to 30 hours per week, increases substantially for those working 30–34 hours per week, and then increases very significantly at 35 or more hours per week (full-time employment).

Table 1 Employer Health Insurance Coverage by Hours Worked, 1982 and 1992 (%)

Usual hours per week	1982	1992
1 – 10	9.8	14.3
11 – 20	17.4	17.9
21 – 30	27.7	24.6
30 – 34	47.6	38.8
≥ 35	73.1	64.2

SOURCE: Author's tabulations from the March 1983 and 1993 CPS.

More direct evidence showing how employer policies prevent part-time workers from receiving health benefits is provided by the Fringe Benefit Supplement to the April 1993 CPS. This supplement included questions asking the reasons why respondents were not covered by employer-provided health benefits. Thirty-one percent of those working were not covered by employer-provided health benefits. Among those uncovered, 81 percent worked for an employer that did not provide health insurance to any of its employees and 19 percent were uncovered even though they worked for an employer that offered insurance to some employees. Of the 19 percent uncovered, 11.17 percent (more than half) were ineligible because of their status as part-time employees. To summarize, the data suggest firms hiring part-time workers frequently do not offer health insurance to any employee or do not extend health insurance to the part-time workers in their workforce. I hypothesize this discrimination reflects firm efforts to minimize adverse selection by part-time workers who, for reasons unobserved by the firm, have a high demand for health insurance.

THE DEMAND FOR HEALTH INSURANCE COVERAGE AMONG MARRIED FEMALES

The prediction that married women adjust their labor-supply decisions based on their husbands' health insurance coverage assumes the demand by wives for jobs with employer-provided health benefits is influenced by spousal coverage. In this section, I test this assumption and report estimates of the effect of husbands' health insurance coverage on the probability that wives have health insurance coverage through their employers. Table 2 shows the two by two table of own employer health coverage for working couples. The percentage of couples where neither individual had own employer health insurance increased slightly from 15.8 percent in 1982 to 17 percent in 1992. In 1982, 31 percent of the sample included couples where both the husband and wife were covered by their respective employers. By 1992, this percentage had dropped to 24.2 percent. Over the 10-year period,

Table 2 The Joint Distribution of Own Employer Health Insurance Coverage For Working Couples (%)[a]

	Husband's coverage from own employer			
	Uncovered		Covered	
Wife's coverage from own employer	1982	1992	1982	1992
Uncovered	15.77 (2,523)	17.03 (3,170)	36.70 (5,872)	38.0 (7,086)
Covered	16.62 (2,661)	20.79 (3,870)	30.80 (4,943)	24.21 (4,491)

[a] The top number is the cell percentage. The number in parentheses shows the cell sample sizes.

there was also a slight increase in the share of couples where only the husband had coverage and a larger increase, from 16.6 to 20.8 percent, in the share of couples where only the wife had own employer coverage. This increase is consistent with data from other years (Olson 1995) and suggests coverage through the wife's employer became a more important source of family coverage over the 10-year period.

One statistical model for describing the relationship between spousal health insurance coverage is a binary probit model where the equation describing a wife's health insurance coverage from her own job includes her husband's coverage through his job as a covariate. Unfortunately, the estimates from this single equation approach are likely to be biased because of the correlation between unobservables affecting the demand for health insurance coverage for both the husband and wife. To overcome this problem, I jointly estimate the husband's and wife's coverage and include the husband's coverage on his job in her health insurance equation. This model, a bivariate probit model with a structural shift (Heckman 1978), is described by the following equations:

$$HI^*_H = X_H \beta_H + \varepsilon_H \tag{1}$$

$$HI^*_W = X_W \beta_W + \alpha HI_H + \varepsilon_W \tag{2}$$

$$HI_i = 1 \text{ if } HI^*_i > 0, \text{ otherwise } HI_i = 0 \text{ where } i = H \text{ or } W \tag{3}$$

$$\varepsilon_i \sim N(0, 1) \tag{4}$$

The subscripts in each equation refer to the husband (*H*) or wife (*W*), and HI^*_i is a latent variable indicating the propensity that a job provides health insurance. HI^*_i is a function of a set of observable exogenous factors and an unobserved, normally distributed error term. In this recursive model, a husband's health benefit status directly affects the probability that his wife has a job with health benefits, and α describes the causal effect of the husband's health benefits on the probability his wife has a job with health benefits. I hypothesize that $\alpha < 0$. In other words, own employer coverage by the husband lowers the wife's demand for coverage through her job.

This model permits a nonzero correlation between the error terms in Eqs. 1 and 2 and is identified if there is at least one variable in Eq. 1

that is excluded from Eq. 2. This exclusion restriction is satisfied by assuming the characteristics of the husband (e.g., education, age, race) that affect the probability that he has health benefits on his job do not directly affect HI^*_W. The X_i matrices include individual characteristics typically used in an earnings function: years of completed education, age, age^2, age^3, three race and ethnic variables, the number of children in the household under the age of 6, the number of children aged 6–17 years old, and three region dummies. The data for each year were constructed by creating separate data files from the 1983 and 1993 March CPSs for husbands and wives and merging these files using the household, family, and individual identification codes.

The results in Table 3 show health insurance coverage increases with age and level of education and is lower for minorities than for white workers. The coefficient on husband's health insurance coverage is in the expected negative direction in both 1982 and 1992, and the parameter estimates are virtually the same. The negative coefficients on husband's coverage imply that women married to husbands without health benefits were more likely to be working on jobs that provide health insurance than working wives whose husbands had health benefits. In 1993, the predicted probability that an "average" working wife had a job with health benefits was 0.533 if the husband did not have health benefits and 0.302 if the husband had a job with health benefits.[5]

Alternatives to the Bivariate Probit Model

The recursive structure of the bivariate model describes by Equations 1–4 is a necessary assumption of the statistical model because of the cross-sectional data and the latent variable formulation of health insurance coverage. As Heckman (1978) showed, a simultaneous latent variable model where each individual's health insurance coverage casually affects the coverage of his or her spouse is logically inconsistent. However, there is another recursive model, alternative to Equations 1–4, which reverses the recursive structure and assumes a wife's coverage is exogenous and has a causal effect on the coverage of her husband. Such a model may be appropriate for some couples, and the model reported in Table 3 is obviously misspecified for these couples. Choosing between these two alternative recursive models is difficult. The best solution is to have sample information (e.g., longitudinal data) that could be used to identify which spouse's coverage is exoge-

Table 3 Bivariate Probit Estimates of Own Employer Health Benefit Coverage For Married Couples

	1982		1992	
Variable	Wife's coverage	Husband's coverage	Wife's coverage	Husband's coverage
Constant	–3.538	0.477	–4.563	–0.934
	(0.504)	(0.392)	(0.566)	(0.394)
Kids < 6	–0.249	0.033	–0.209	–0.015
	(0.018)	(0.018)	(0.018)	(0.017)
Kids 6–17	–0.207	0.031	–0.181	0.004
	(0.012)	(0.012)	0.011)	(0.011)
North central	–0.185	–0.095	–0.067	–0.002
	(0.031)	(0.032)	(0.028)	(0.028)
South	–0.005	–0.121	0.003	–0.122
	(0.030)	(0.032)	(0.028)	(0.027)
West	–0.085	–0.158	–0.056	–0.076
	(0.032)	(0.033)	(0.029)	(0.029)
Education	0.050	0.067	–	–
(years)	(0.004)	(0.004)		
High school	–	–	0.297	0.414
			(0.038)	(0.033)
Some college	–	–	0.392	0.498
			(0.040)	(0.034)
College	–	–	0.598	0.638
			(0.044)	(0.037)
Graduate school	–	–	0.823	0.698
			(0.052)	(0.042)
Black	0.327	–0.034	0.171	–0.066
	(0.043)	(0.045)	(0.040)	(0.040)
Hispanic	0.194	0.042	0.019	–0.165
	(0.039)	(0.042)	(0.035)	(0.035)
Other race	0.024	–0.290	–0.033	–0.185
	(0.058)	(0.063)	(0.046)	(0.049)
Age	0.291	–0.100	0.359	–0.042
	(0.041)	(0.029)	(0.045)	(0.028)
$Age^2/100$	–0.737	0.354	–0.869	–0.042
	(0.107)	(0.067)	(0.113)	(0.062)

(continued)

Table 3 (continued)

Variable	1982 Wife's coverage	1982 Husband's coverage	1992 Wife's coverage	1992 Husband's coverage
Age^3/10,000	0.572 (0.090)	–0.371 (0.050)	0.663 (0.093)	–0.010 (0.045)
Husband's *HI*	–0.634 (0.104)	–	–0.602 (0.134)	–
ρ	0.311 (0 065)	–	0.092 (0.085)	–
N	15,999			18,617
–Log *L*	20107.1			24142.9

NOTE: Standard errors are in parentheses.

nous and then estimate different recursive models for the two types of couples. Unfortunately, this sample separation information is not available in the March CPSs.

An alternative method of investigating the sensitivity of the estimates obtained from the recursive structure defined by Equations 1–4 is to use Two-Stage Least Squares (TSLS) and estimate a two equation simultaneous equation model of husbands' and wives' coverage where the coverage of each spouse affects the coverage of the other. Each equation in this two equation system is identified because the husband's (wife's) individual characteristics (age, race, and education) are assumed to be exogenous to the own employer health coverage of the wife (husband). TSLS avoids the recursive structure constraint required of the bivariate probit model because it ignores the latent variable formulation. However, like a single equation linear probability model, the TSLS does not account for the fact that health insurance coverage can only take on a value of 0 or 1. The coefficients are, however, unbiased if the exclusion restrictions are appropriate.

The TSLS model estimates in Table 4 suggest a wife's coverage does affect her husband's coverage, and the point estimate of this effect was larger in 1982 than in 1992. However, the estimated effect of the husband's coverage on the wife's coverage was much larger than the effect of wife's coverage on husband's coverage in both years—nearly twice as large in 1982 and almost three times larger in 1992. In addi-

Table 4 TSLS Estimates of Wives and Husbands Own Employer Health Insurance (HI) Coverage[a]

	Dependent variable			
	Wife's HI		Husband's HI	
Independent variable	1982	1992	1982	1992
Wife's HI			–0.1775 (0.0622)	–0.1055 (0.0458
Husband's HI	–0.3205 (0.0461)	–0.2953 (0.0500)		

[a] Each model also includes the variables reported in Table 3. Standard errors are in parentheses.

tion, the coefficient of –0.295 on husband's coverage in 1992 implies an almost 30 percentage point effect of a husband's coverage on the probability that his wife is covered by health insurance from her employer. This value is close to the predicted 23.1 percentage point difference (0.533 – 0.202) previously reported from the bivariate probit estimates for an average couple.

These TSLS results suggest that there are some couples where the husband's coverage is affected by his wife's coverage. However, the more common occurrence appears to correspond to the model described by Equations 1–4, where the husband's coverage is exogenous. While the joint determination of spousal coverage deserves additional research with better data, these results support the conclusion that, for many couples, a wife's demand for employer-provided health insurance is causally affected by her husband's coverage.

Coverage Versus Eligibility for Health Insurance

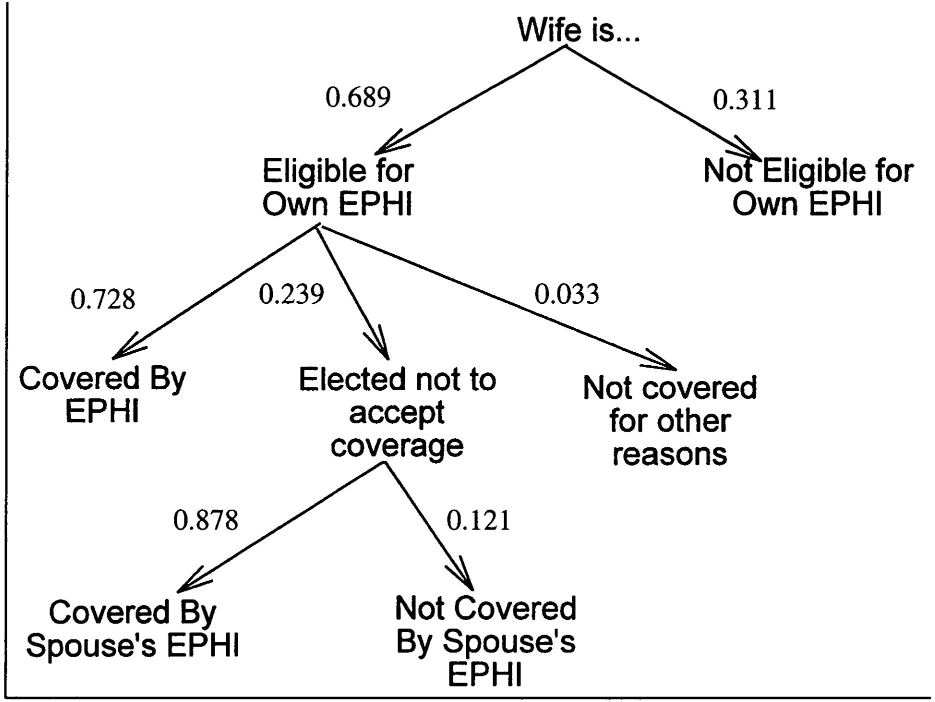
The health insurance questions in the two March CPSs solicit information on whether or not household members are covered by employer-provided health insurance obtained from an employer. As previously discussed, there are two distinct subgroups among uncovered workers. An uncovered individual could be ineligible for insurance because the employer does not offer insurance or because he/she works for an employer that offered health insurance but, for various reasons, the individual was not eligible for coverage. It is also possible an uncovered individual is eligible for employer-provided health benefits but voluntarily decides not to accept the coverage, perhaps because of the cost of health insurance (e.g., substantial premium copayments) or because of spousal coverage.

The distinction between uncovered individuals who are ineligible for coverage but select out of coverage is critical for this analysis. The bivariate probit and TSLS estimates show wives whose husbands are uncovered by health benefits are more likely to be covered by own employer health benefits. I interpret this estimate to mean a husband's coverage affects a wife's demand for a job where she is eligible for insurance, and it is this demand for health insurance eligibility that leads some women to adjust their labor supply and shift from part-time to full-time employment. In the March CPS data, it is impossible to distinguish between this explanation and the alternative explanation that wives with spousal coverage choose not to accept coverage even though they are eligible because of their husbands' insurance coverage. If this latter explanation is the dominant causal explanation, then the estimates in Table 3 are biased estimates of the effect of husbands' coverage on the labor-supply decisions of wives.

While the March surveys do not identify the reasons individuals are not covered by employer health insurance, this information is available from the April 1993 CPS. Figure 2 shows a tree diagram of the distribution of coverage and eligibility for working wives included in the April survey. Of those not covered by own employer health insurance, 62.4 percent are ineligible for coverage through their employer. The remaining share of uncovered wives are eligible for coverage but have not taken advantage of the health benefits. Most (87.8 percent) of those that elect no coverage are covered by their husband's employer-provided health insurance (EPHI); overall, 29 percent of those not covered by their own EPHI are covered by their husband's EPHI.

Fully modeling the joint decisions of couples that determine both coverage and eligibility is beyond the scope of this paper. However, I did estimate the bivariate probit model described by Equations 1–4 using the April data, for which the dependent variable for the wife indicates eligibility for coverage. The coefficient on spouse's coverage in the wife's eligibility equation was –0.6975 with a standard error of 0.260, very similar to the estimates reported in Table 3. These results

Figure 2 Health Insurance Coverage and Eligibility for Wives in the Labor Force, April 1993 (EPHI=Employer-provided health insurance)



SOURCE: Author's calculations from the April 1993 CPS (n = 5077 married couples).

suggest that the effect of spousal coverage reported in Table 3 is dominated by the effect of husband's coverage on eligibility and not seriously biased by wives who are eligible through their employers for coverage but decide to decline coverage.

LABOR SUPPLY DECISIONS OF WORKING WIVES

The estimates in Tables 3 and 4 show spousal health insurance coverage significantly increases a working wife's demand for a job with health benefits. To meet this demand, I hypothesize that some wives lacking spousal coverage work full time to obtain health insurance but would have preferred to work fewer hours if their husbands had jobs with health benefits. This labor-supply adjustment occurs because of the limited supply of part-time jobs offering health insurance.

Table 5 provides simple descriptive statistics from the 1983 and 1993 March CPSs that are consistent with this hypothesis. The table shows hours worked per week by working, married women as a function of husband's health insurance coverage. The mean number of hours worked per week was 33.9 in 1982; the median was 40 hours per week and two-thirds of the wives in the sample usually worked 35 or more hours per week. Rows 2 and 3 of the table breakdown the sample based on husband's health insurance coverage. The mean number of hours worked per week in 1982 was 1.5 hours greater for wives whose

Table 5 Wives' Average Hours Worked per Week by Spousal Health Insurance Coverage, 1982 and 1992

	1982			1992		
	Mean hours	Median hours	Fraction ≥ 35 hours	Mean hours	Median hours	Fraction ≥ 35 hours
All married females	33.9	40	0.667	35.7	40	0 709
Husband's HI = 1[a]	33.4	40	0.649	34.9	40	0.678
Husband's HI = 0	34.9	40	0.703	37.0	40	0.759

SOURCE: Authors calculations from 1983 and 1993 March CPS.

[a] If HI = 1, the husband has health insurance; if HI = 0, he does not.

husbands did not have health insurance. In addition, the percentage of wives working 35 or more hours per week was 64.9 percent for households where the husband had health insurance and 70.3 percent in households where the husband lacked health insurance. The difference by spousal health benefit coverage in the fraction of married women working 35 or more hours per week had increase in 1992 to 8.1 percentage points.

While other factors correlated with labor supply and husbands health insurance coverage (e.g., husband's income) are not controlled for in Table 5, a simple difference-in-difference estimator calculated over the time period suggests spousal coverage had an effect on the labor-supply decisions of some wives. Specifically, the change over the 10 years in the fraction of married women working full time (e.g., 35 hours/week) was 0.0423 and the fraction of husbands with health insurance declined by 0.054. This implies a one point decline in the fraction of husbands without health benefits led to 0.78 point increase in the percentage of wives working full time (e.g., 0.0423 / –0.0541). The other noteworthy fact from Table 5 is the difference in the fraction of wives working full time by spousal coverage may have had a bigger effect on labor supply in 1992 than in 1982.

The inferences that can be drawn from Table 5 obviously do not control for individual and family characteristics that influence labor supply and are possibly correlated with husbands health insurance coverage or change in the status of husbands health insurance coverage.[6]

To address this concern, Table 6 reports ordinary least square (OLS) estimates of the hours worked per week in 1982 and 1992 as a function of education, three race/ethnicity dummies, age, the presence and age of children in the household, husbands income, and whether or not the husband has health insurance on his job.[7] The parameter estimates on the control variables are all in the expected direction and consistent with prior research. The estimate on husband's health insurance coverage is also in the predicted negative direction in both years. However, the estimated parameter is smaller in 1982 and is not significantly different from zero at the 0.05 level. In 1992, however, the coefficient is much larger and more precisely estimated. The 1992 estimate suggests that married women whose husbands did have health insurance worked an average of 1.5 hours less per week relative to women whose husbands did not have health insurance. I interpret this estimate as the

Table 6 OLS Estimates of Hours Worked per Week by Wives in the Labor Force

Variable	1982	1992
Constant	23.237 (4.530)	23.980 (4.749)
Kids < 6	–3.316 (0.158)	–2.988 (0.143)
Kids 6–17	–1.610 (0.103)	–1.879 (0.092)
Education	0.083 (0.039)	–
High school	–	0.549 (0.312)
Some college	–	0.595 (0.324)
College	–	2.007 (0.351)
Graduate school	–	4.517 (0.413)
Black	2.901 (0.389)	2.100 (0.347)
Hispanic	2.878 (0.349)	1.168 (0.288)
Other race	3.094 (0.525)	2.138 (0.400)
Age	1.078 (0.374)	1.058 (0.378)
Age 2/100	–2.602 (0.972)	–2.126 (0.961)
Age 3/10,000	0.180 (0.081)	0.109 (0.079)
Husband's HI	–0.351 (0.230)	–1.458 (0.182)
Husband's salary ($1,000)	–0.062 (0.008)	–0.036 (0.004)
R^2	0.0517	0.0634
N	15,999	18,617

NOTE: Standard errors are in parentheses.

average labor-supply response of women caused by the effect of spousal coverage on the choice between a part-time job without health benefits and a full-time job with benefits.

There are several alternative explanations for the results in Table 6. First, husband's health insurance coverage may simply index "better" jobs. Thus, in households where the husband has a better job as measured by the presence of health insurance, the wife works fewer hours per week because her husband has a "good" job. This alternative explanation could conceivably explain the difference between the estimated effect of husband's health insurance coverage in 1982 and 1992 because there was a decline in health insurance coverage among men over this time period that was most pronounced among less educated men with little work experience (Olson 1995). Thus, health insurance coverage in 1992 was a better predictor of "good" jobs than health insurance coverage in 1982. While it is difficult to rule out this alternative explanation, I think it is an unlikely explanation for the results since the model also controls for husbands earned income. Therefore, this explanation requires that the distinction between "good" and "bad" jobs is correlated with health insurance coverage after conditioning on husband's income.

A second explanation for the results in Table 6 is that the effect of husband's health insurance coverage on the labor supply simply reflects the income effect of these health benefits. However, the magnitude of the coefficient on husband's health coverage in 1992 is simply too big for this explanation to be plausible. Ten thousand dollars in husband's income in 1992 produces a predicted 0.4 hour decline in the work week. If the effect of husband's health coverage was due only to the income effect, the estimate of 1.458 on the health coverage variable corresponds to an income effect equivalent to about $40,000 (e.g., 1.458 / 0.036). Since health insurance is substantially less expensive than $40,000, the estimated effect of husband's health insurance in his wife's labor supply cannot be accounted for by the income effect of the benefit. This explanation is more plausible in 1982 because the coefficient on husband's health insurance implies the income value of health benefits was about $5,600 (e.g., 0.351 / 0.062). While group health insurance in 1982 was also less expensive than this point estimate, given the standard errors around the parameter estimates, it is possible that a husband's health insurance had an effect on his wife's labor supply in 1982 due primarily to the income effect.

What accounts for the different effect of husband's health insurance coverage on their wives' labor-supply decisions in 1982 and 1992? One explanation is that the relative increase in the cost of health care between 1982 and 1993 increased household demand for health insurance because the higher cost of health care raised the risk of not having health insurance. This increase in demand caused more wives without health insurance to work full time to obtain employer-provided health insurance. While this explanation is intuitively appealing, it is not consistent with the bivariate probit results reported in Table 2. If this explanation accounted for the differing results, I would have expected husbands health insurance coverage to have a bigger effect on the probability a wife held a job with health benefits in 1992 than in 1982. As discussed above, this is not the case; the coefficient on husband's health insurance coverage in the wife's health insurance equation is virtually the same for the two time periods.

The differing effect of a husbands coverage on his wife's hours worked in the two time periods is more easily explained by the decline in health insurance coverage among married males. The probability that husbands in the sample had employer-provided health benefits declined from 0.67 in 1982 to 0.62 in 1992. This fact suggests that wives who worked full time in 1982 and were married to husbands without coverage would have worked full time even if their husbands had held a job with health insurance. In 1992, however, the decline in health insurance coverage among husbands meant that more households were faced with the prospect of not having any employer-provided health insurance. This new segment of potentially uninsured households included families where the woman would have preferred to work part time if her husband had a job with health benefits but increased her work week to full time to obtain health benefits. This explanation suggest the full-time hours constraint that had to be met to obtain health insurance was not binding on wives in 1982 but was binding on the labor-supply decision of some wives in 1992.[8]

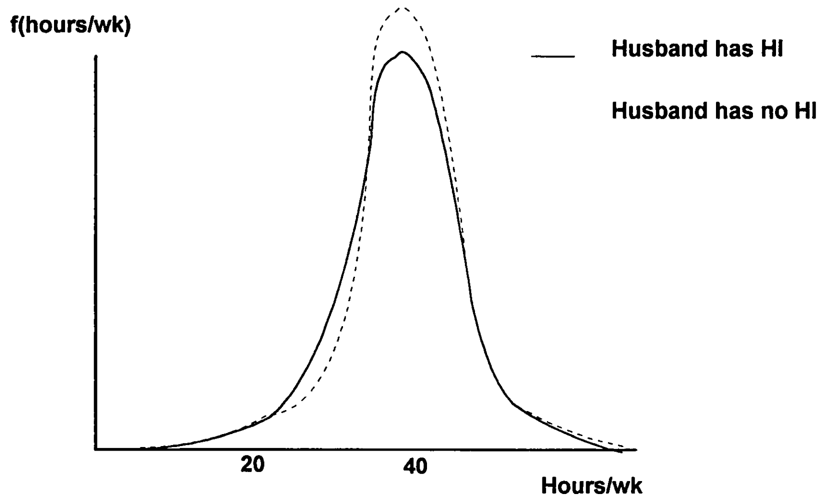
QUANTILE REGRESSION AND MULTINOMIAL LOGIT ESTIMATES OF HOURS WORKED

The OLS estimates reported in Table 6 will not adequately capture the changes in the hours distribution resulting from differences in husband's health insurance coverage if the impact of spousal coverage varies at different values of the hours distribution. The OLS estimates for 1992 that describe a simple mean shift in the conditional hours distribution by the 1.5 hours is not sufficient to move workers from part-time to full-time status except for those workers already very close the margin between full-time and part-time employment. Moreover, it is likely that those women close to the margin between full-time and part-time work were most affected by their husbands' health insurance status because a full-time job with health insurance involves only a modest increase in hours worked.

This suggests the difference in the hours distribution between wives with and without spousal health benefits will look like Figure 3 if the employer constraint hypothesis is correct. Compared to households where the husband has health benefits, in households where the husband does not have health insurance, the distribution has less mass immediately below full-time employment and more mass at full-time employment (e.g., 35–40 hours per week). However, the tails of the two distributions are similar for two reasons. First, the lower tails of the hours distributions are similar because of the high cost of full-time employment for wives that would otherwise prefer to work substantially less than full time. The upper tails do not differ by husbands coverage because working substantially more than 35–40 hours per week has no impact in the probability a woman has a job with health benefits. The OLS estimates cannot capture the differential behavioral responses of women at different points of the hours distribution.

Quantile regression was used to test if the impact of husbands coverage on the distribution of hours worked by married women is consistent with Figure 2.[9] Separate quantile regression models were estimated for the 10th, 15th, 20th, 25th, 30th, 35th, 40th, and 90th percentiles of the conditional hours distribution, where each model included the same exogenous variables used in the OLS estimates. A comparison of the coefficients on husband's health insurance coverage

Figure 3 Predicted Effect of Husband's HI on f(hours) for Working Wives



across these different quantile regressions identifies the portion of the conditional hours distribution most affected by husband's health insurance overage.

Table 7 reports the key results from the quantile regressions for each of the two years. Consistent with the OLS results, the coefficient estimates for 1982 are all insignificant and show husbands health insurance had no impact on any point of the hours distribution for married working women. In contrast, the negative and significant coefficients for 1992 show fewer women worked part time when their husbands did not have health insurance. Furthermore, the larger (in absolute value) coefficients at 21–30 hours suggest that the lack of spousal coverage had the biggest impact on women that were already working more than half time. However, at the 40th percentile (about 40 hours per week), there was only a very modest difference (0.7 of an hour) between those with and without spousal health insurance. This pattern of results is consistent with the hypothesized effect summarized in Figure 3, where the differences in the distribution become very modest once the full-time threshold is reached.

Table 7 Summary of the Quantile Regression Estimates of the Effect of Husband's HI on Hours Worked by Spouse

	1982		1992	
Estimated quantile	Hours worked per week at this quantile	Coeff. on husband's HI	Hours worked per week at this quantile	Coeff. on husband's HI
0.10	16	0.775 (0.582)	20	–1.939 (0.466)
0.15	20	0.284 (0.432)	21	–2.843 (0.364)
0.20	24	0.441 (0.513)	25	–2.738 (0.416)
0.25	27	0.049 (0.486)	30	–2.253 (0.324)
0.30	30	0.021 (0.442)	35	–2.084 (0.238)
0.35	35	0.001 (0.291)	36	–.307 (0.191)
0.40	36	0.086 (0.202)	40	–0.678 (0.125)
0.90	40	–1.587 (0.190)	45	–1.023 (0.254)

NOTE: Each quantile regression includes controls for education, race, age, children in the family, and husband's earning. Standard errors are in parentheses.

I next estimated separate quantile regressions for points of the cumulative hours distribution over two ranges—(0.01, 0.46) and (0.87, 0.95)—to more fully describe the impact of husband's health benefits on hours worked by women in 1992.[10] Models were estimated at 0.01 intervals, and the results were then used to predict and plot the estimated cumulative conditional weekly hours distribution for two working wives that were identical except for husband's health insurance benefits.[11]

Figure 4 shows that, among women with average sample characteristics, those wives most likely to increase hours from part time to full time because their husbands lack coverage were wives who would have been working close to full time even if their husbands had health benefits.[12] Figure 4 shows that about 29 percent of those without spousal health insurance would have worked 30 or fewer hours. In contrast, about 33 percent of those with spousal coverage would have worked 30 or fewer hours per week. Note, however, that the distributions are very similar up to about 15 hours per week and then converge once again at about 37 hours per week. These differences correspond to the hypothesized differences in the probability density functions shown in Figure 3. In other words, the estimates suggest that in 1992 the lack of spousal coverage caused a small fraction of wives to work full time and obtain a job with health insurance instead of working 15–35 hours per week without health benefits.

Figure 4 shows the predicted marginal effect of husband's coverage on hours worked for a wife with average sample characteristics. The position of this predicted conditional density of hours worked by spousal coverage will differ from Figure 4 for women with different characteristics. For this reason, Figure 4 cannot be interpreted as the average effect in the sample of spousal coverage on hours worked but only the marginal effect for wives with the average characteristics.

Estimates from a multinomial logit model of hours worked can be used to obtain an estimate of the average effect of husband's coverage on hours worked for the sample, which does permit husband's coverage to have a different effect on different portions of the hours distribution (e.g., Figure 3). This is accomplished by dividing the hours distribution into non-overlapping intervals and predicting the effect of spousal coverage on the probability that hours of work for wives fall in each interval.

Such a model was estimated for 1992 using the same independent variables included in the OLS and quantile regression models. The dependent variable was constructed by classifying the hours worked by wives into one of the following ranges: 1–10 hours, 11–20 hours, 21–30 hours, 31–34 hours, 35–39 hours, exactly 40 hours, and more than 40 hours.

To conserve space, I have not reported the coefficients for the multinomial model.[13] However, the hypothesis that husband's health insurance has no effect on wife's coverage was easily rejected, as was the hypothesis that husband's coverage had the same effect on the probability of being in each interval of the hours distribution.[14] Table 8 illustrates the predicted effect of husband's coverage on wife's coverage

Figure 4 Predicted Conditional CDF (Hours) for an Average Wife

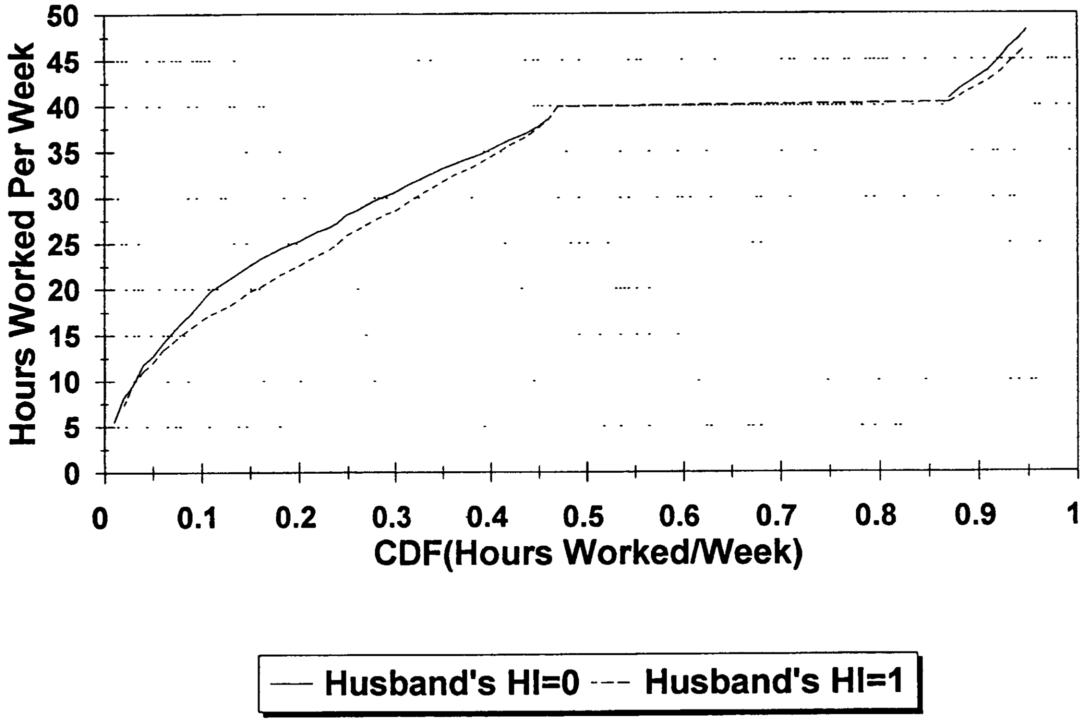


Table 8 Predicted Average Effect from Multinomial Logit Model of Husband's Coverage on Hours Worked by Wives, 1992

	Predicted percentage ın each weekly hours range	
Hours/week range	Husband is covered	Husband is uncovered
1–10	4.70	4.36
11–20	12.42	9.33
21–30	12.75	10.31
31–34	2.79	2.48
35–39	10.23	10.85
Exactly 40	44.20	47.51
> 40	12.92	15.16
Total	100.00	100.00

NOTE: These predictions are based on a multinomial logit model that includes all of the variables reported in column 2 of Table 3.

obtained from the multinomial logit model. The estimates were used to calculate two probabilities for each person—one where husband's coverage is set equal to 0 and a second probability where husband's coverage is set equal to 1. The probabilities for each hours range were then averaged over the entire sample and are reported in Table 8. The differences between columns 1 and 2 of Table 8 show the predicted average effect of spousal coverage on the probability wives worked in each hours range. For example, the first row shows husband's coverage had a very small effect (4.7 – 4.36) on the probability wives worked 1–10 hours per week.

Overall, the results reported in Table 8 are consistent with the theoretical predictions and the OLS and Quantile regression estimates. The average effect of spousal coverage on the probability a wife works full time (35 or more hours) was 6.17 percentage points (e.g., 47.51 + 15.16 + 10.85 – 44.20 – 12.92 – 10.23). As rows 2 and 3 of the table show, this shift to full-time work was generated primarily by a reduction in the probability of working 11–30 hours per week.

The estimates reported in Table 8 were used to generate an estimate of the impact of husband's coverage on the expected number of hours worked by wives. This was obtained using the midpoints of each hours range to calculate a weighted average for hours worked using the estimates in each column as weights.[15] This exercise produced the following values:

E (Hours $|HI_H = 1) = 34.31$

E (Hours $|HI_H = 0) = 35.74$

The difference between these two values, 1.43 hours, is an estimate of the average effect of husbands' coverage on wives' labor supply. This is about a 4 percent effect (1.43/34.31) and very close to the 1.5 hours obtained from the OLS model.

ESTIMATES OF THE TRADE-OFF BETWEEN WAGES AND HEALTH BENEFITS

In this section I report estimates of the wage-health benefit trade-off faced by married women predicted by compensating wage theory. To estimate this trade-off, I confined the sample to married women that were in the Outgoing Rotation Group subsamples in the March 1993 CPS and that worked 35 or more hours per week. The sample was limited to wives working 35 or more hours per week because this appears to be the threshold between full-time and part-time employment (Hotchkiss 1991). Restricting the sample to the Outgoing Rotation Group allowed use of union status and usual weekly earnings questions. The latter question permits a better measure of the hourly wages than that which is available for the entire March CPS.

The usual empirical strategy for determining the magnitude (and existence) of the wage-fringe benefit trade-off is to estimate a standard earnings equation and include as one of the independent variables the presence or absence of health insurance. Frequently, however, this strategy does not provide results consistent with the theory, and the usual explanation is that the fringe benefit dummy is correlated with the error term in the wage equation because of unobserved factors (e.g., unobserved human capital) that have an impact on both wage levels and health insurance coverage (Smith and Ehrenberg 1983). The

OLS estimate reported in Table 9 suffers from this problem. The OLS coefficient on wife's coverage in a standard wage model is positive, highly significant, and implies married women with coverage receive a 17.8 percent wage premium.[16]

Table 9 OLS and IV Estimates of the Trade-Off between Wages and Health Insurance for Wives in the Labor Force, 1992

	OLS estimates	IV estimates
Constant	–0.213	–0.255
	(0.454)	(0.479)
North Central	–0.103	–0 126
	(0.022)	(0.024)
South	–0.143	–0.147
	(0.021)	(0.022)
High school	–0.037	–0.030
	(0.023)	(0.024)
Some college	0.386	0.418
	(0.031)	(0.034)
College	0.611	0.665
	(0.033)	(0.038)
Grad. school	0.742	0.801
	(0.037)	(0.043)
Black	–0.029	–0.041
	(0.030)	(0.032)
Hispanic	–0.088	–0.000
	(0.026)	(0.039)
Other race	–0.041	–0.073
	(0.036)	(0.038)
Age	0.147	0.161
	(0.036)	(0.038)
Age 2/100	–0.327	–0.364
	(0.091)	(0.097)
Age 3/20,000	0.241	0.273
	(0.075)	(0.080)
Wife's HI	0.164	–0.113
	(0.016)	(0.084)
Union	0.088	0.135
	(0.020)	(0.025)
R^2	0.327	0.252

$N = 2{,}790$.

NOTE: Standard errors are in parentheses.

An unbiased estimate of the health insurance/wage trade-off can be obtained using an instrument correlated with wife's coverage but uncorrelated with the error term in her wage equation. The variable I used as an instrument for her coverage is her husband's coverage through his employer.[17] As the estimates in Table 2 show, husband's health insurance coverage has a strong effect on the probability his wife has health insurance on her job. Using this variable as an instrument for HI_w, the coefficient on HI_w is negative and implies women with health insurance earn about 11 percent less than comparable women without health insurance. This estimate is consistent with the theory of compensating wage differentials.

SUMMARY

The primary purpose of this study was to investigate the relationship between employer-provided health insurance and the labor-supply decisions of married women. I argue that the demand by a married woman for a job with health insurance is heavily influenced by whether or not her husband has health insurance through his employer. Where husbands lack health insurance coverage, married working women are more likely to be found in jobs that provide health benefits. This bivariate estimates using both 1982 and 1992 data strongly support this prediction.

Employer efforts to minimize adverse selection in the provision of health benefits limits the supply of part-time jobs that provide health benefits. As a result, individuals typically have to work full time to obtain a job with health insurance. This constraint implies husbands health insurance coverage will have an effect on the labor supply decisions of working wives without spousal coverage who seek health insurance through their employer. The estimates for 1982 fail to support the hypothesis that spousal health insurance coverage changed the labor supply of women in 1982. In contrast, there was a small but significant increase in hours worked in 1992 by those women married to men without health insurance. The differing results for the two time periods is explained by the decline in employer-provided health insurance among husbands. In 1982, the requirement that wives worked full time to obtain health insurance was not binding, but the decline in coverage among husbands became binding by 1992 and caused some wives to shift from part-time to full-time employment to obtain health coverage.

The quantile regression and multinomial logit estimates for 1992 suggest that most of the shift in hours occurred among women who would have preferred to work 10–35 hours with spousal coverage but increased their work week to 35–50 hours per week to obtain health insurance. The multinomial logit estimates suggest that, on average, a change in husband's coverage alters the probability his wife works full time by about 9.2 percent.

Finally, estimates of the determinants of the hourly wage for married women working full-time in 1993 supports the trade-off between wages and health benefits that is predicted by compensating wage theory.

Notes

The author has benefited from helpful comments by Ron Ehrenberg, Jonathan Gruber, Doug Hyatt, and seminar participants at Princeton University and Columbia University.

1. This statement is based on my tabulations of the usual weekly hours from the 1979–1991 Outgoing Rotation Group (ORG) file of the Current Population Survey. The data were from the National Bureau of Employment Research CD extract of the ORG.
2. The analysis focuses on hours worked per week conditional on participation in the labor market. I do not investigate the impact of health benefits on the labor-force participation decision.
3. This approach is not without problems. First, it may take considerable time before the firm is able to distinguish between claims due to purely random health shocks and claims that reveal information about the underlying but unobserved health status of the individual and other family members. Second, if the external labor market doesn't observe the information on health status that is revealed to the firm, the firm may be unable to retain the worker because his or her total compensation net of the firm's estimate of expected health claims will fall below the worker's opportunity wage in the external market.
4. The firm may face discrimination charges if it adjusts wages based on certain predictors of health claims such as age and sex.

5. By "average" I mean a 30-year-old, white, high school-educated, working wife living in the Northeast with one child under the age of 6 and one child 6 to 17 years old.
6. For example, the difference-in-difference estimator calculated from changes of the 10-year period will substantially overstate the effect of husband's coverage on the fraction of wives working full time if, between 1982 and 1992, broader changes in the commitment of wives to full-time employment were occurring. The difference-in-difference estimator would mistakenly attribute the impact of these changes to the decline in husband's health coverage.
7. Whether or not the wife has health insurance on her job is not included in her labor-supply equation because health insurance coverage and hours worked are assumed to be jointly chosen by the wife, given the employer constraints that full-time work is required to receive health benefits. Therefore, this labor-supply equation is most appropriately thought of as a "reduced form" equation where husband's health insurance coverage influences both the wife's coverage and her labor-supply decision.
8. Another explanation for the differing results is that firms were less likely to offer health benefits to part-time workers in 1992 and, therefore, the hours constraint became binding on more households. The results in Table 1 do not support this explanation.
9. Quantile regression is most commonly used to estimate how exogenous variables influenced the median of the dependent variable.
10. Approximately 41 percent (0.87 – 0.46) of the sample worked exactly 40 hours per week, which was the median for virtually all groups in the sample. Thus, differences in the exogenous variables had no impact on this mass point in the hours distribution, and models for values in the (0.47, 0.86) range were not "identified."
11. The predictions were based on a 30-year-old, white, high school-educated woman living in the Northeast with one child under 6 and another child between 6 and 17 years old.
12. Note that the axes in this graph are reversed from what is customary. The cumulative distribution function (CDF) of hours worked is on the horizontal axis and the vertical axis plots the predicted hours worked at each point of the CDF.
13. These coefficients are available from the author upon request.
14. A likelihood ratio test of the hypothesis that husband's coverage had no effect on wife's coverage produced an χ^2 value of 77.82, and the critical value for 6 d.f. and 0.001 significance level is 22.5. The likelihood ratio test of the hypothesis that husband's coverage has an equal effect on the chances of being in each hours interval produced an χ^2 value of 76.78, and the critical value for 5 d.f. and 0.001 significance level is 20.5.
15. For the over 40 hours per week category, I used the average number of hours worked for those working more than 40 hours per week (e.g., 50.33 hours).
16 The premium is equal to exp. (0.1636) – 1.

17. The estimate of ρ, the correlation between the error terms in the two health insurance equations reported in Table 2, is not different from zero in 1992. This suggests husband's health insurance coverage is a plausible instrument.

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